a hybrid access system ~~including~~ for controlling transfers of data packets from said host server to said remote client over said shared medium in accordance with said downstream channel protocol and for monitoring communication over said independent upstream channel thereby to schedule upstream communication in accordance with predefined rules, and

said hybrid access system further including an interface that enables connection with said host server and a downstream router for enabling transmission of high speed ~~ata~~ data packets to said remote client over said shared media.

59. The ~~72. A~~ packet delivery system as recited in claim 58 ~~71~~ wherein said hybrid access system effects control of assignment of upstream channels to said remote client so as to assign either a shared channel or dedicated channel to a remote client.

60 The ~~73. A~~ packet delivery system as recited in claim 59 ~~72~~ wherein said hybrid access system effects switching of channel assignments among said remote client between shared and dedicated upstream channels.

61 ~~74~~. The method as recited in claim 7 ~~15~~ further including the step of providing said independent upstream channel on a medium different from a physical medium of said downstream channel.--

REMARKS

Claims 1-6, 15, 17, 19-20 and 24-25 remain in the application for reconsideration. New claims 26-74 are being added for additional consideration. Applicants' counsel has

exercised care so as to avoid the introduction of new matter in contravention of 35 U.S.C.§132.

Informalities

Regarding the information disclosure statement, applicants hereby provide copies of missing references;

USP 4,894,789 to Yee
USP 4,987,486 to Johnson et al.
USP 5,014,125 to Pocock et al.
USP 50051,822 to Rhodes
USP 5,093,718 to Hoarty et al.

In terms of relevance to the claimed subject matter, the above references disclose video-on-demand systems, or the like, which do not teach the combination of elements claimed in this application, and in respect of particular claims, the above references do not disclose a hybrid access system or network manager that establishes and manages network sessions for transmitting packetized data and the like over asymmetric forward and return channels operating at different speeds. In addition, none of the above references appears more relevant than the art cited and applied by the examiner.

A PTO form 1449 listing these references is attached.

We have also reviewed the lengthy specification and have corrected minor typographical errors, as requested.

A supplemental declaration is also attached to address the examiner's objections to the initialed interlineations appearing in the original application (Fig. 7 and claim 1) and to address the amended and new claims introduced herein.

Regarding the suggested Sec. 112, second paragraph, discussion of claims 1, 5, 17 and 19, we've made certain amendments touching the examiner's concerns. We also made other changes in an effort to particularly point out and clearly define the invention over the art.

Rejection Under 35 U.S.C. §102(b)

Substantively, the examiner has rejected claims 17, 19, 20 and 24-25 under 35 U.S.C. Sec. 102(b) as being unpatentable over McMullan, Jr. et al. As discussed herein, we traverse this rejection on the basis of certain amendments to the claims and for reason that McMullan Jr., et al. (hereafter "McMullan") does not exactly disclose "each and every" element or the technical substance of the claims as they previously stood and as currently amended. We explain below.

There appears to be a fundamental mistake as to what McMullan shows. For a reference to become statutory under Sec. 102, it must disclose "each and every" element of the claimed invention. Otherwise, it can only be applied under Sec. 103. Clearly absent from McMullan, even before making any amendment, is the provision of an acknowledgment queue located at a "transmitting node" of the network. Instead, McMullan deals with multiple message queues located at a "receiver node" that are simultaneously routed to message queues also located at the receiver node. It is stated in the Official Action, for example, that McMullan recites "the message queue for buffering the data packets for transmission to a system manager and filtering out prior transmission to the system manager by matching address and discarding duplicate data . . ." Perhaps it was not clear that the invention, as claimed, places the acknowledgment queue at a transmitting node. This is clearly different from what McMullan discloses. For this reason, among

others, McMullan does not show the same kind of redundancy filtering that is performed by the claimed invention.

Further, there is another distinction that disqualifies McMullan as a reference under Sec. 102. McMullan does not, for example, discard redundant "information" packets. Instead, he discards information that is duplicative of other information which a device has previously sent to a message queue. This is clearly different from suppressing the transmission of redundant packets about to be transmitted a transmit queue, as claimed. For instance, at col. 29, line 49, of McMullan it is stated that if "a matching terminal address is found, then the duplicate [information] will be discarded." The "terminal address" here refers to the address in the queue associated with the device. McMullan, at col. 30, line 1, further indicates that device information is formed into packets and then forwarded to a "system manager." All of this activity occurs at the receiving end of the system--and not in preparation of transmission of non-redundant data packets. Thus it is abundantly clear by the description at col. 30, lines 8-16, that McMullan simply provides for removal of packets at the receiving end after receipt of an acknowledgment, and not the removal of a redundant contained in a transmit queue.

Quite distinctively, the present invention deals with suppression (removal) of messages at a transmit queue prior to their being actually transmitted. Queuing the packets (or acknowledgments) prior to transmission introduces some latency in the transmission path but overall throughput is improved in noisy channels. In operation, information contained an acknowledgment received at the transmitting end is analyzed to determine whether the content of a soon-to-be-transmitted packet was earlier received or acknowledged. This is evident when operating in TCP/IP sessions where the present invention accounts for sequence numbers to assess redundancy in data packets since new acknowledgments that

contain additional information that may supersede prior acknowledgments. If the content was already acknowledged, the packet (or acknowledgment) is suppressed to make room for other packets to enter the transmit queue. This scheme is not shown or taught by McMullan.

Although the examiner has also applied McMullan to claim 19, we find nothing in McMullan and the examiner has pointed to no specific disclosure therein, as required by 37 CFR 1.106(b), pertaining to the deployment of a power calibration scheme in an interactive network environment. In addition, we do not find disclosure of successive "transmission of . . . different power levels," "confirming of receipt of [power level] indications," or "setting . . . of power levels," as recited in the claims. Also, no routers are disclosed in McMullan. In contrast with the claim language, the power calibration techniques set forth at cols. 45-46 of McMullan are "manually" initiated, rather than being "dynamically" performed, as recited in claim 19. For these reasons, and others, McMullan is clearly inadequate as an anticipatory reference under 35 U.S.C. Sec. 102(b). Accordingly, the rejection must be withdrawn.

We also assert that McMullan cannot properly be applied to claim 24 or 25 under 35 U.S.C. Sec. 102(b). Apart from the lack of deployment in McMullan of an interactive network session, as suggested in the patent claims, there is further no showing of "detecting a quality characteristic," determining whether the . . . detected quality characteristic deviates" or "dynamically switching to another communication channel" based on a detected quality characteristic (e.g., feedback control). McMullan, on the other hand, simply describes pre-programmed clock switching of channels at selected times, e.g., 6:00 p.m. and 4:00 a.m., is not responsive to a detected "quality characteristic." In other words, McMullan's "power management" scheme is static and calibration occurs under

operator control, rather than being dynamically and automatically performed. Claim 24 further supports these distinctions by calling for switching based on "last operability indication," "signal to noise ratio" and "error frequency."

The invention defined by claim 17 and 19 operates in full-duplex mode using protocols with dynamic, real-time feedback mechanisms. No comparable operation is found in McMullan. We note that the McMullan system has little, if any, need to provide real-time interactive session-type network connectivity since it simply responds by fulfilling "orders" given by a remote terminal to download a file.

To summarize generally, with respect to the elements of the claims, McMullan does not anticipate the invention, as required under Sec. 102(b), because it lacks one or more of the features: (i) asymmetric communications, (ii) dynamic or automatic switching of channels based on power levels or quality characteristics, (iii) full-duplex interactive session-type network connectivity with remote user by simultaneous control of downstream and upstream communications and (iv) receiving acknowledgments at the transmit queue.

Rejection Under 35 U.S.C. §103

The examiner has rejected claims 1-6 and 15 under 35 U.S.C. Sec. 103 as being unpatentable over Litteral et al. ("Litteral") in view of Wheeler et al. ("Wheeler"). In summary, this rejection should also be withdrawn because the combined disclosures of Litteral and Wheeler with respect to recited elements of claims 1-6, 15 and new claims 26-74 do not teach or suggest (i) use of a "shared medium" between a distribution facility (headend or central office) adapted for point-to-multipoint communication between a host and multiple clients/users in conjunction with a network manager

or hybrid access system to manage or assign channels or bandwidth in order to provide efficient user of resources to support a greater number of users (this differs from the point-to-point architecture of ADSL networks where multiple users are reached by multiplexing (Litteral, Fig. 1),(ii) use of an "independent" asymmetric upstream channel that is "loosely" coupled with or controlled by the high speed downstream channel, such as by assignment of different protocols or packet data rates by a hybrid access system or a network manager (this is critical to attaining efficient use of the upstream channel), (iii) providing selectable control of speed on the lower speed return (upstream) channel to afford efficient use of bandwidth according to bandwidth demand and data type (e.g., text, audio, video) (this aspect particularly relates to claims 30, 32, 39, 42 and 44-47 where the upstream return channel is routed back to a headend facility for subsequent routing to the server), (iv) use of a hybrid access system or network manager to establish interactive session-type (real time, two-way) network communication between a host and a client/user (e.g., providing loose coupling between downstream and upstream channels to manage the flow of information in each direction based on user or server requests rather than just providing "ordering data" as described at col. 6 of Litteral), (v) use of a network manager or a hybrid access system for scheduling assignment of an upstream channel to a remote client/user in accordance with scheduling information including priority status, shared/dedicated channel request signal, service authorization or the like, (vi) use of different physical media (cable or wireless optical, electrical, electromagnetic, etc.) for upstream and downstream channels, or (vii) other features, aspects and advantages provided by the combination of these features.

As indicated above, the initial application claims have been amended to recite important distinctive features which succinctly point out and clearly define the invention over

the applied art. A major difference between the invention, as now claimed, and any combined teachings of Litteral and Wheeler lies in nature of the network interconnecting the host and the remote clients. The "shared medium" (e.g., LAN system) of the claimed invention provides point-to-multipoint distribution of information to remote clients whereas Litteral discloses an ADSL network, which has a point-to-point architecture.

As described below, the claimed differences provide other structural and operational differences which are reflected in the primary independent claims, as well as, in multiple dependent claims for which patentability stands alone.

Utilization of the claimed point-to-multipoint "shared medium" architecture, for example, is critical to attaining efficient utilization of system resources (e.g., substantial increases in the number of users for a given amount of hardware), attaining reliable information transfers by providing alternative routes (e.g., alternate switching of clients among different logical channels on the same shared (e.g., common) medium), improving tolerance to noise and other disturbances, providing multiple speeds of operation on the upstream channel when managed by a signal transmitted over the common medium, providing modular growth and scalability with minimum incremental equipment costs, affording flexible control of upstream traffic through various classes of service or client bandwidth demand, enabling the use of bandwidth of other idle client devices connect to the shared medium, and more. These aspects of the present invention cannot readily be attained using the point-to-point ADSL architecture of Litteral (Wheeler was cited only for its disclosure of routers).

Litteral describes a "video-on-demand" system enabling a user to "order" video programming by issuing requests over

"local loop" of a PSTN or dedicated ISDN network and receiving video information from a video provider over an ADSL network. (Col. 6, lines 3-14). Litteral's improvement relates to providing real-time control of video programming (col. 4, lines 30-34) and use of a video storage buffer 42 (Fig. 2) to provide VCR-type control of video (e.g., pause, slow motion, forward, reverse, etc. by the subscriber (col. 5, line 28-35, col. 11, lines 1-8). A "packet data network" is even suggested as a means for carrying order data (col. 6, lines 18, 35) and the subscriber local loop may include "a standard tip and ring telephone pair, a fiber optic cable or a coaxial cable" (col. 6, lines 29-30). The kind of video control includes scheduling data transmitted from the subscriber to the central office via telephone (col. 5, line 21). Wheeler, although cited for its disclosure of routers, discloses a share "platform" as opposed to a shared medium that distributes information via telephone lines (col. 5, lines 32-35). Connectivity between the central server and end users is established via the routers mentioned by the examiner. See col. 6, lines 23-35. Devices within the Wheeler system connect via a conventional LAN network.

As known in the art, systems like Litteral are not "interactive" in the real-time sense. A user simply "orders" a selection via a low speed channel, e.g., via telephone, and a video archive simply sends the information via a high speed channel. While this mechanism is asymmetric, the two-way communication is not conducted in a real-time session where a network manager or hybrid access system manages or coordinates upstream and downstream transmissions in terms of channel assignments, service level authorizations, switching between shared and dedicated channels, fulfillment of channel requests and the like. Litteral alludes to a "network session" at col. 7, line 61-62 (placed in quotes) but his system obviously is not conducted in a manner where interactive communication is

managed by a network manager or the like. In each direction of the Litteral's purported "session," respective communication paths, although asymmetric, are completely independent from each other lacking any intervention or supervision by a network manager, as claimed, to establish and maintain a user session with a server, as claimed, and do not occur over a shared medium. Even the upstream channel of Litteral's remote control unit 130 connection with the ADSL network (Fig. 2, col. 11, lines 1-8) fails to disclose any control by a network manager as discussed above. Important to distinguishing the claimed invention over the art is that Litteral transmits all upstream control data and all downstream video information on a dedicated loop between the subscriber and the central office. In other words, there is no "shared medium" in Litteral's path between the subscriber and central office.

It is stated at page 7 of the examiner's comments that Fig. 2 of Litteral shows a "network management system" that "anticipate[s] the system manager connected to the LAN." We believe that use of the term "anticipate" is inappropriate here since the analysis is to be conducted under Sec. 103, and not Sec. 102. Nevertheless, Litteral's purported network management system 28 fails to attain items (ii), (iii), (iv), (v) and (vi) mentioned above since, among other things, Litteral's ADSL network has a point-to-point architecture, e.g., has a spoke and hub configuration. Each use has a dedicated line to the central office. In fact, any suggestion that Wheeler's routers may be combined with Litteral point-to-point system seems a bit ambiguous since Litteral's connection is via dial-up on a dedicated line thereby obviating the need for a routing function. Use of dedicated line cannot motivate or suggest the use of routers. They are conflicting rather than supplementary thereby defeating the legal basis for *prima facie* obviousness. See §2143.01, MPEP.

Equally ambiguous is the reference to the Litteral's satellite dish of Fig. 1 as a teaching of "broadcasting" stated at page 7 of the examiner's comments. Is Litteral concerned with satellite broadcasting or was placement of satellite dish in drawing figure merely "window dressing?" No client devices in the Litteral system seem to be communicating over a shared satellite broadcast signal.

We also fail to see the relevance of the infrared remote control mentioned at page 7 of the examiner's comments to management of sessions, channel assignment and the like over a shared medium since the infrared remote control is also point-to-point and limited to one device at a time.

Further, Litteral's Network Manager 28 appears to be employed to control the digital cross-connect switch 24 for establishing the point-to-point connections by multiplexing. On the other hand, the point-to-multipoint architecture of the shared or common medium of the claimed invention enables broadcasts to, addressing of and management of multiple clients connect "in parallel" to a common medium whereby to achieve the critical advantages stated above.

In view of the above, we believe that it is readily apparent that Wheeler cannot be combined with Litteral to support an obviousness-type rejection under Sec. 35 U.S.C. 103. Considering what was to be achieved by the invention, as stated in items (i) through (vi) above, we hardly doubt that that combination alone, (e.g., ADSL technology and router technology) would have been of any benefit in leading a person of "ordinary" skill to achieve the recited structural and functional attributes of the invention, as defined by the present claims. In considering the invention as a whole (as required by Sec. 103), no grounds of obviousness can be supported on the basis of the applied art.

We also considered the other cited art and reached the same conclusion.

On the basis of the foregoing, reconsideration and early allowance is respectfully requested. Applicants' counsel stands ready to assist the examiner in resolving any issue regarding the claim language by telephonic or personal interview.

A request for an automatic one-month extension of time is hereby requested. Please charge any excess fees in connection with this response not otherwise provided upon submission to Cushman Darby & Cushman deposit account no. 03-3975 to the order of 7225/217537.

Respectfully submitted,

CUSHMAN DARBY & CUSHMAN

Timothy Loomis, Reg. No. 37,383
Lawrence Harbin, Reg. No. 27,644
Cushman Darby & Cushman
1100 New York Avenue, Suite 900
Washington, D.C. 20005-3918
(202) 861-3716 (202) 861-3000